

**CM-DLV11-J**

**4-CHANNEL SERIAL INTERFACE**

**INSTALLATION**

**MANUAL**

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**CAMINCONN**

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MANUAL CM-DLV11J

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## 1.1 INTRODUCTION

This manual provides the information necessary to install and operate the CM-DLV11J serial line interface manufactured by Camintonn Corporation, Santa Ana, California.

This material is arranged into the following sections:

Section 1 - GENERAL INFORMATION. This section contains a brief general description of CM-DLV11J and the specifications for the interface.

Section 2 - INSTALLATION AND OPERATION. This section explains the procedures for equipment installation.

## 1.2 GENERAL DESCRIPTION

The CM-DLV11J is a 4-channel asynchronous serial line interface between the LSI-11\* bus and standard I/O devices. The interface receives parallel data from the LSI-11 bus, converts it to a serial word and transmits it to the peripheral device. The CM-DLV11J also receives a serial data word and converts it to parallel data for output to the LSI-11 bus.

There are two control status registers per channel: a receiver CSR (RSCR) and a transmitter CSR (XCSR). The CSRs maintain information on the status of the operation and contain bits which control the mode of operation. There are two data buffer registers per channel: a receiver (RBUF) and a transmitter (XBUF). The buffer registers hold the data received from or transmitted to an external device.

The module has the ability to act as a polled or interrupting peripheral dictated by processor (software) commands. The fourth channel can be configured as a dedicated console device interface.

The CM-DLV11J can respond to any address in the upper 4K peripheral page (160000<sub>g</sub> to 177776<sub>g</sub>). It operates in sixteen contiguous registers unless Channel 4 is configured otherwise. In that case, twelve contiguous addresses are required, and Channel 4 port operates at 177560<sub>g</sub> thru 177566<sub>g</sub> for console.

\* Trademark of Digital Equipment Corporation

All standard baud rates are supported. Each channel has independent baud rate jumper switch selects.

The serial line can be jumper switch selected for compatibility with EIA RS232, RS422, or RS423.

The CM-DLV11J is hardware and software equivalent to four DLV11's. It can be used to replace the DEC DLV11J. If not otherwise specified, the CM-DLV11J will be shipped in the configuration shown in Table 1-1.

TABLE 1-1. FACTORY CONFIGURATION

Channel	Address	Register	Vector	Baud Rate	Break Response	UART Operation	Serial Interface
1	176500	RCSR1	300	9600	None	8 Data bits, no parity, one stop bit	EIA RS232C
	176502	RBUF1					
	176504	XCSR1	304				
	176506	XBUF1					
2	176510	RCSR2	310	9600	None	8 Data bits, no parity, one stop bit	EIA RS232C
	176512	RBUF2					
	176514	XCSR2	314				
	176516	XBUF2					
3	176520	RCSR3	320	9600	None	8 Data bits, no parity, one stop bit	EIA RS232C
	176522	RBUF3					
	176524	XCSR3	324				
	176526	XBUF3					
4	177560	RCSR4	60	9600	HALT	8 Data bits, no parity, one stop bit	EIA RS232C
	177562	RBUF4					
	177564	XCSR4	64				
	177566	XBUF4					

### 1.3 SPECIFICATIONS

#### 1.3.1 PHYSICAL SPECIFICATIONS

The CM-DLV11J is contained on a single dual-wide printed circuit board.

Width 5.2 inches (13.2 cm)  
Height 8.9 inches (22.8 cm)

The circuit board is a multilayer etch board with ground plane.

#### 1.3.2 POWER REQUIREMENT

+5VDC 1.3A  
+12VDC 0.20A

#### 1.3.3 ENVIRONMENTAL SPECIFICATIONS

Temperature: Operating 0°C to 50°C  
Non-operating -40°C to 85°C

Relative Humidity 10% to 90% without condensation.

## 2.1 UNPACKING AND INSPECTION

The CM-DLV11J is shipped in a special packing carton designed to keep the board from vibrating and to give it maximum protection during shipment. The packing carton should be retained in case the unit requires reshipment.

To unpack the CM-DLV11J, remove any packing materials and visually inspect for physical damage.

## 2.2 INSTALLATION

Refer to Figure 2-1 for specific switch and jumper locations.

### 2.2.1 ADDRESS SELECT SWITCHES

The base address for the CM-DLV11J is selected through switch A. Refer to Table 2-1.

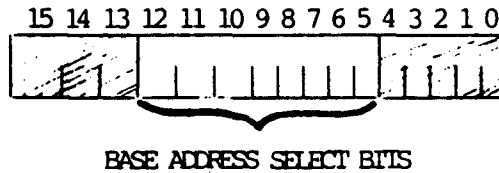


TABLE 2-1. ADDRESS SELECT BIT JUMPER SHUNT CONFIGURATION

Address Bit	Jumper Shunt A-
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12

JUMPER IN = 0  
OUT = 1

RS-232 XMITTER (4 Places)

RS-422 XMITTER (4 Places)

CHANNEL 1 thru 4 Receiver RS232, RS422 Option

See Table 2-6 For Detail

Vector Selection See Table 2-3

Baud Rate Selection

Interrupt Level Option See Table 2-10

Break Response See Table 2-5

Base Address Select Bit Jumper Shunt Configuration See Table 2-1

Master Reset of the UART See Table 2-9

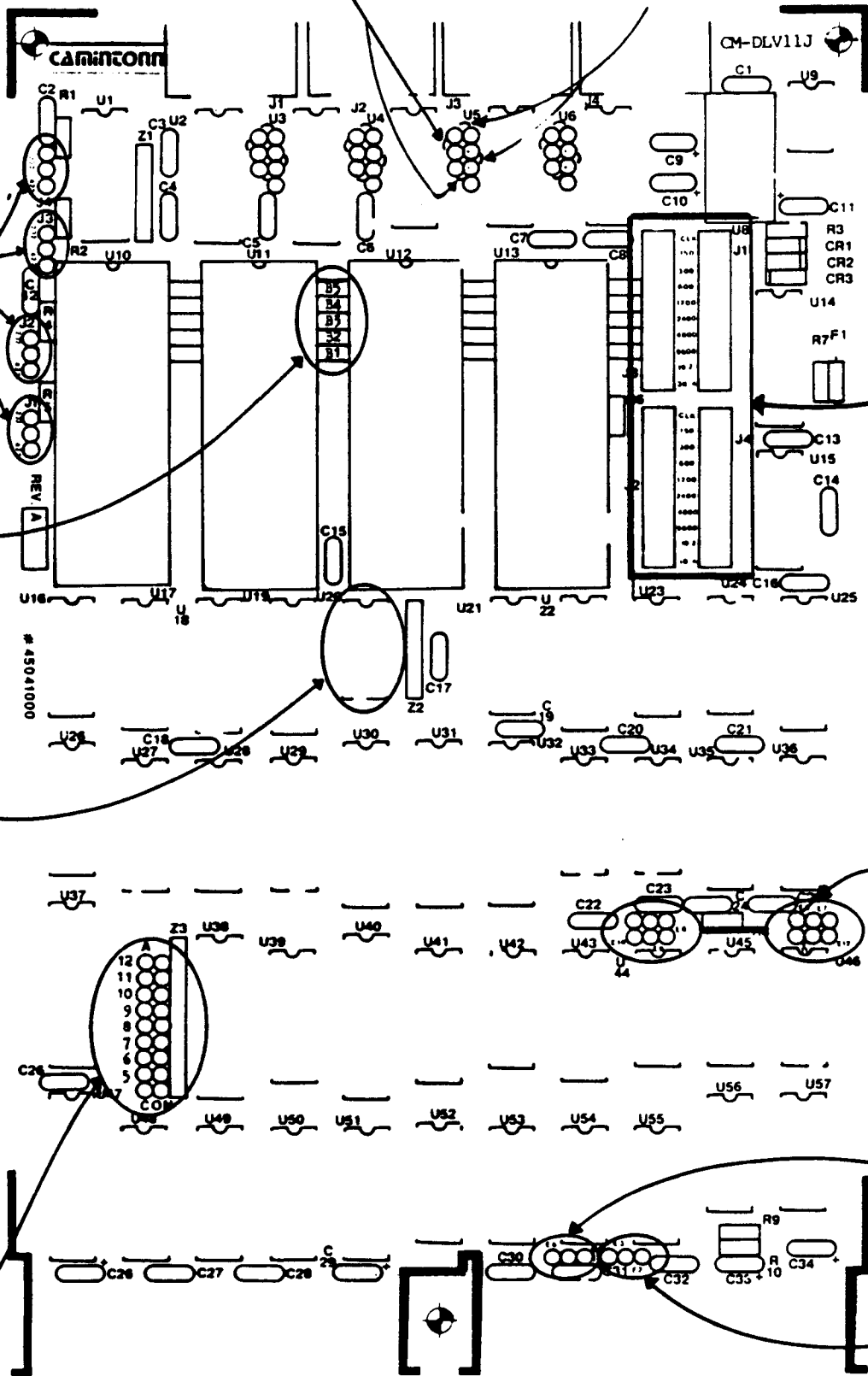


Figure 2-1. Switch & Jumper Locations



A jumper set to the IN position corresponds to an inactive signal on the bus. For example, the switch settings for base address 176500 (factory configuration) and alternate base addresses 176540, 176600 and 176640 are shown in Table 2-2.

TABLE 2-2 SWITCH SETTING FOR BASE ADDRESS

Jumper A	Base Address			
	176500	176540	176600	176640
12	out	out	out	out
11	out	out	out	out
10	out	out	out	out
9	in	in	in	in
8	out	out	out	out
7	in	in	out	out
6	out	out	in	in
5	in	out	in	out

### 2.2.2 VECTOR SELECT SWITCHES

The base interrupt vector for the CM-DLV11J is selected through switch S1 (U20). Refer to Table 2-3.

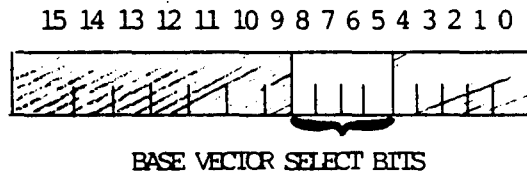


TABLE 2-3. VECTOR SELECT BIT SWITCH

Address Bit	Switch U20-
5	6
6	5
7	4
8	3

A switch set to ON corresponds to an INACTIVE signal on the bus: For example, the switch settings for base vector 300 (factory configuration) and alternate vector settings 340, 400 and 440 are shown in Table 2-4.

TABLE 2-4. SWITCH SETTING FOR BASE VECTORS

U20	Base Vectors			
	300	340	400	440
6	ON	OFF	ON	OFF
5	OFF	OFF	ON	ON
4	OFF	OFF	ON	ON
3	ON	ON	OFF	OFF

\*\*\* 2.2.3 SELECTION OF CHANNEL 4 (J4)

Channel 4 can be used as the console or a fourth serial port. Remove jumper shunt at location "CON" when configured for console port.

2.2.4 THE CONSOLE

When Channel 4 is set up as a console, it will automatically respond to the console device address at 177560 and vector to location 60.

2.2.5 BREAK RESPONSE

When the break key on the console is pressed, the UART detects a framing error. The processor response to the error detection is jumper selectable as shown in Table 2-5. See Figure 2-1 for jumper locations.

TABLE 2-5. BREAK RESPONSE JUMPER

Break Response	Install Jumper at
Halt	E4
Re-Boot	E5
No Response	No Jumper

\*\*\*

Note:

If Channel 4 is not used as the console device interface, be sure to remove the jumper block.

### 2.2.6 BAUD RATE SELECTION

Baud rates for each of the four channels on the CM-DLV11J are set independently by jumper selection. The jumper pins labeled J1 through J4 control the baud rate for the corresponding channel.

### 2.2.7 DATA WORD FORMAT

The data word format for each channel on the CM-DLV11J is independently jumper selectable. The number of data bits, the number of stop bits and the parity mode are determined as shown in Table 2-7.

TABLE 2-6. DATA, STOP BIT, AND PARITY SELECT

UART\*

Number of Data Bits	Jumper B3	Jumper B4
5	Install	Install
6	Install	Remove
7	Remove	Install
8	Remove	Remove
Parity Mode	Jumper B5	Jumper B1
Odd	Install	Install
Even	Remove	Install
No Parity	Don't Care	Remove
Number of Stop Bits	Jumper B2	
1	Install	
2	Remove	

\*UART for Channel 1 is U10, Channel 2 is U11, Channel 3 is U12, Channel 4 is U13

### 2.2.8 SERIAL INTERFACE SELECTION

The CM-DLV11J can interface with standard EIA RS-232C, RS-423 and RS-422 devices. The serial interface for each channel is independently jumper selectable as shown in Fig. 2-1.

### 2.2.9 SERIAL CONNECTOR PIN LAYOUT AND SIGNAL DESIGNATION

The serial interface connector (J1, J2, J3 or J4) is shown in Figure 2-2. The respective interface connection pin designations are defined in Table 2-9.

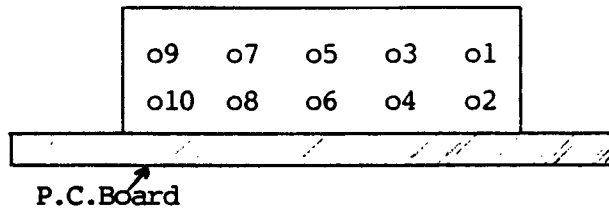


Figure 2-2. I/O Connector

TABLE 2-7. I/O PIN DESIGNATIONS

I/O Connector Pin Number	Signal
1	CLK (16 x Baud Rate)
2	Signal Ground
3	XMT DATA+ (EIA-RS-232C, RS-423)
4	XMT DATA-
5	Signal Ground
6	KEY (No Pin)
7	RCV DATA-
8	RCV DATA+
9	Signal Ground
10	+12VDC

2.2.10 INTERRUPT PRIORITIES

Interrupt priorities within the CM-DLV11J module are structured as shown in Table 2-10.

TABLE 2-8. INTERRUPT PRIORITIES

Priority	Register
7 (high)	CH1 RBUF
6	CH2 RBUF
5	CH3 RBUF
4	CH4 RBUF
3	CH1 XBUF
2	CH2 XBUF
1	CH3 XBUF
0 (low)	CH4 XBUF

2.2.11 MASTER RESET OF THE UART

The UARTs can be jumper selected to do a Master Reset on DCOKL or INITH. See Table 2-11.

TABLE 2-9. MASTER RESET OF THE UART

Master Reset Signal	Install Jumper at
DCOKL	E3
INITH	E2

TABLE 2-10. INTERRUPT LEVEL

INTREQ LEVEL	Install Jumper at
4	E10, E7, E12
5	E8, E6, E12, E10
6	E9, E11, E6
7	

L I M I T E D      W A R R A N T Y

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